4. PRODUCTION, IMPORT, USE AND DISPOSAL

4.1 PRODUCTION

Bromoform may be prepared from acetone and sodium hypobromite, by treating chloroform with aluminum bromide, or by electrolysis of potassium bromide in ethyl alcohol (HSDB 1988; Stenger 1978).

Available information indicates that bromoform is not currently produced commercially in the United States (SRI 1985, 1986, 1987, 1988). Past bromoform producers included Dow Chemical Company, Midland, Michigan, and Geoliquids, Inc., National Biochemical Company, Chicago, Illinois. In 1975, production of bromoform in the United States was estimated to be less than 500 kkg[a] and the 1977 production was estimated at 50 to 500 kkg (NTP 1988; Orrell and Mackie 1988; Perwak et al. 1980).

Chlorodibromomethane is produced only in small quantities for sale to laboratories by Columbia Organic Chemical Company, Cowden, South Carolina, and Aldrich Chemical Company, Milwaukee, Wisconsin (HSDB 1988; Perwak et al. 1980).

Both bromoform and chlorodibromomethane are inadvertently generated during water chlorination when chlorine reacts with endogenous organic materials such as humic and fulvgic acid (Rook 1977). It is estimated that 17 kkg of bromoform and 204 kkg of chlorodibromomethane were generated in this way in 1978 (Perwak et al. 1980).

4.2 IMPORT

Orrell and Mackie (1988) estimate that 6 to 9 kkg of bromoform are currently imported by Freeman Industries. No information was located on the import of chlorodibromomethane, but it is considered likely that little, if any, is imported.

4.3 USE

Currently, bromoform has only limited uses, including: (1) as a fluid for mineral ore separation in geological tests, (2) as a laboratory reagent, and (3) in the electronics industry in quality assurance programs (Orrell and Mackie 1988). Formerly, bromoform was used as a solvent for waxes, greases, and oils (HSDB 1988; NTP 1988), and as an ingredient in fire-resistant chemicals and gauge fluids, as an intermediate in chemical syntheses, and as a sedative and antitussive agent (HSDB 1988; Perwak et al. 1980).

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[a]1 kkg = 1,000 kg (1 metric ton)

Chlorodibromomethane is used in laboratory quantities only and there is no current commercial use for this compound (Perwak et al. 1980). Chlorodibromomethane was formerly used as a chemical intermediate in the production of fire extinguishing agents, aerosol propellants, refrigerants, and pesticides (HSDB 1988).

4.4 DISPOSAL

Because bromoform and chlorodibromomethane are listed as hazardous substances, land disposal of wastes containing these compounds is controlled by a number of federal regulations (see Chapter 7). Wastes containing chlorodibromomethane or bromoform may be incinerated by rotary kiln, liquid injection, or fluidized bed methods.

The amount of bromoform and chlorodibromomethane released or disposed of through industrial and/or laboratory use of these chemicals is not known, but is considered to be insignificant compared to the amount inadvertently generated by water chlorination processes (EPA 1987c; HSDB 1988; Perwak et al. 1980).